

Two Methods of Measuring Farm-Linked Employment

The Economic Research Service uses two methods to measure economywide employment related to agriculture. Both methods are widely respected, and, while they provide different employment totals, both point to the continued importance of farm-related jobs in an era when direct farm employment has declined to modest levels. Both methods also recognize the wide-ranging influence of farm-related activity in the U.S. economy beyond the farm gate.

Farm and farm-related (FFR) employment estimates are produced by adding up the number of jobs in industries that have been identified as related to farming. ERS analysts identified FFR industries by choosing those where 50 percent or more of the work force is employed in providing goods and services necessary to satisfy the final demand for agricultural products. The number of full- and part-time jobs in these sectors reported in U.S. Bureau of the Census's County Business Patterns is summed to obtain an estimate of FFR employment. Since the County Business Patterns data are published for counties, FFR employment can be reported for States, regions, or other geographical units.

Food and Fiber System (FFS) employment estimates are developed using a national input-output model that describes input use and factor payments for each sector of the economy. The model is used to estimate the amount of employment in each sector needed to support the final demands for agricultural products. Thus, this measure may include jobs in all sectors of the economy, even those where the link to agriculture is weak. However, unlike the FFR measure, the FFS estimates do not count all jobs in a particular sector; only the jobs needed to support demand for agricultural products are counted.

The two methods each have strengths and weaknesses. The FFS estimates are based on a method that explicitly models the interrelationships between various sectors of the economy. The FFS estimates have a close relationship to the U.S. Department of Commerce's National Income and Product Accounts. However, the estimates are not available below the State level. The FFR estimates have the advantage of rich geographic detail that can provide valuable information about the importance of agriculture in various counties or multicounty regions.

Appendix table 10—Share of total State employment by farm and farm-related industry, 1994

State	Total farm and farm-related industries	Total farm and farm-related industries	Farm production, agricultural services, forestry, and fishing	Agricultural inputs	Agricultural processing and marketing	Agricultural wholesale and retail trade	Indirect agribusiness
	Jobs	Percentage of total employment					
United States	21,958,262	15.3	2.4	0.3	2.2	10.0	0.4
Alabama	410,429	18.6	3.0	.4	5.3	9.5	.5
Alaska	53,886	15.1	3.7	.1	2.3	9.0	—
Arizona	281,893	13.5	1.3	.1	.6	11.4	.1
Arkansas	270,545	20.8	5.0	.6	5.5	8.8	.9
California	2,326,836	14.2	2.0	.2	2.0	9.8	.3
Colorado	333,023	14.4	1.9	.2	1.4	10.7	.1
Connecticut	215,827	11.0	.7	.1	.8	9.1	.3
Delaware	57,845	13.6	1.2	.2	2.3	9.7	.3
Florida	1,110,856	15.5	1.9	.2	1.1	12.0	.2
Georgia	702,657	17.6	1.9	.3	4.4	10.3	.7
Hawaii	112,135	15.4	1.9	.1	1.5	11.9	—
Idaho	133,633	21.3	6.3	1.0	3.2	10.3	.4
Illinois	930,675	14.0	1.8	.6	1.7	9.4	.5
Indiana	498,024	15.4	2.7	.4	1.5	10.3	.5
Iowa	402,031	23.4	7.6	1.7	3.9	9.8	.5
Kansas	296,598	18.9	5.4	.9	2.7	9.6	.4
Kentucky	403,992	20.3	5.9	.3	3.2	10.3	.5
Louisiana	328,002	15.3	2.3	.4	1.7	10.4	.5
Maine	113,599	16.9	2.7	.1	3.3	10.5	.4
Maryland	335,801	12.5	1.1	.1	1.1	10.0	.2
Massachusetts	453,776	12.3	.5	.1	1.4	9.9	.4
Michigan	677,606	13.7	1.8	.1	1.0	10.5	.3
Minnesota	473,349	16.3	4.0	.6	1.9	9.4	.4
Mississippi	248,545	19.1	4.2	.5	4.8	9.0	.5
Missouri	526,621	17.1	4.2	.5	2.4	9.5	.4
Montana	90,470	19.6	6.4	.6	.9	11.5	.2
Nebraska	233,972	22.5	6.8	1.6	4.0	9.9	.2
Nevada	88,386	10.4	.8	.1	.4	9.0	.1
New Hampshire	89,719	13.7	.9	.1	1.3	11.0	.4
New Jersey	521,818	11.9	.5	.1	1.6	9.2	.5
New Mexico	126,483	15.0	2.8	.2	.8	11.0	.3
New York	1,161,883	12.1	.9	.1	1.7	9.2	.3
North Carolina	841,550	20.2	2.4	.3	7.3	9.6	.6
North Dakota	94,595	24.0	10.2	1.7	2.1	10.0	—
Ohio	851,218	14.0	1.8	.2	1.1	10.3	.5
Oklahoma	298,834	17.2	5.1	.4	1.6	9.9	.2
Oregon	301,306	17.1	4.4	.3	1.6	10.4	.3
Pennsylvania	925,222	14.5	1.4	.2	2.6	10.0	.4
Rhode Island	69,361	13.1	.5	.1	1.9	10.1	.6
South Carolina	376,421	19.0	1.9	.2	5.8	10.5	.7

See notes at end of table.

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Appendix table 10—Share of total State employment by farm and farm-related industry, 1994—Continued

State	Total farm and farm-related industries	Total farm and farm-related industries	Farm production, agricultural services, forestry, and fishing	Agricultural inputs	Agricultural processing and marketing	Agricultural wholesale and retail trade	Indirect agribusiness
	Jobs	Percentage of total employment					
South Dakota	104,479	23.6	9.3	1.1	2.8	10.2	.3
Tennessee	539,014	18.1	3.5	.3	3.9	9.9	.6
Texas	1,543,581	15.4	2.9	.3	1.7	10.3	.3
Utah	148,820	13.9	1.9	.2	1.6	10.0	.3
Vermont	59,050	16.7	3.2	.3	1.7	11.4	.3
Virginia	555,594	14.8	1.9	.2	2.8	9.4	.4
Washington	490,857	16.4	3.5	.3	1.6	10.7	.3
West Virginia	117,335	14.7	3.0	.2	1.3	9.9	.2
Wisconsin	540,366	18.1	4.0	.7	2.5	10.2	.8
Wyoming	48,959	16.9	4.6	.4	.5	10.3	1.0

— = Less than 0.1 percent

Source: Calculated by ERS using Department of Commerce data.

Appendix table 11—Share of total nonmetro employment by farm and farm-related industry, 1994

State	Total farm and farm-related industries	Total farm and farm-related industries	Farm production, agricultural services, forestry, and fishing	Agricultural inputs	Agricultural processing and marketing	Agricultural wholesale and retail trade	Indirect agribusiness
United States	6,024,299	23.9	7.9	0.8	4.6	10.1	0.5
Alabama	179,820	29.8	6.4	.9	12.7	9.0	.9
Alaska	35,527	19.6	6.6	.2	4.1	8.7	—
Arizona	41,560	17.2	2.3	.2	.4	14.2	.1
Arkansas	160,074	25.8	8.0	1.0	7.4	8.8	.6
California	94,911	22.5	8.2	.6	1.6	11.9	.2
Colorado	89,703	22.4	6.8	.6	1.9	13.1	.1
Connecticut	19,195	15.0	1.7	.2	2.4	10.1	.6
Delaware	17,090	27.4	3.8	.7	10.2	12.8	—
Florida	90,062	24.0	8.0	.7	2.0	12.9	.4
Georgia	280,554	26.0	5.1	.7	9.9	9.5	.9
Hawaii	39,337	22.8	6.0	.2	2.6	14.2	—
Idaho	98,714	24.6	8.6	1.3	3.6	10.6	.5
Illinois	201,054	22.5	8.2	1.4	2.6	9.7	.6
Indiana	162,067	19.9	6.3	.8	2.4	9.6	.9
Iowa	258,951	29.3	12.6	2.2	4.6	9.2	.5
Kansas	176,854	26.6	10.9	1.5	4.6	9.3	.3
Kentucky	224,602	25.7	10.3	.5	4.8	9.6	.4
Louisiana	85,523	21.1	7.0	1.0	3.5	8.8	.8
Maine	63,701	17.7	3.8	.2	3.0	10.3	.4
Maryland	37,923	20.8	4.4	.4	3.6	12.0	.4
Massachusetts	7,140	15.4	2.6	.1	1.4	10.9	.4
Michigan	137,445	19.3	5.4	.3	1.1	11.9	.5
Minnesota	208,125	27.0	11.0	1.5	4.1	10.0	.5
Mississippi	187,220	22.6	5.9	.7	6.6	8.8	.6
Missouri	224,059	27.0	11.8	1.0	4.6	9.3	.3
Montana	71,257	20.8	8.0	.5	.8	11.2	.3
Nebraska	149,689	32.6	14.1	2.8	5.6	10.0	.1
Nevada	14,550	12.5	3.4	.3	.2	8.5	.1
New Hampshire	35,784	14.1	1.4	.1	1.4	10.8	.4
New Jersey	NA						
New Mexico	56,524	18.5	5.6	.3	.9	11.2	.5
New York	116,693	17.2	4.2	.4	1.7	10.6	.4
North Carolina	323,500	28.1	5.0	.6	12.2	9.7	.7
North Dakota	63,528	31.0	17.1	2.0	2.6	9.2	—
Ohio	193,790	20.0	5.9	.7	2.5	10.1	.9
Oklahoma	148,879	25.1	11.7	.7	3.1	9.5	.2
Oregon	103,897	22.5	8.0	.6	2.1	11.4	.4
Pennsylvania	156,745	19.7	3.9	.4	4.3	10.9	.4
Rhode Island	5,852	13.7	1.1	—	.3	12.1	—

See notes at end of table.

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Appendix table 11—Share of total nonmetro employment by farm and farm-related industry, 1994—Continued

State	Total farm and farm-related industries	Total farm and farm-related industries	Farm production, agricultural services, forestry, and fishing	Agricultural inputs	Agricultural processing and marketing	Agricultural wholesale and retail trade	Indirect agribusiness
South Carolina	126,894	26.2	3.8	.3	10.9	10.3	.8
South Dakota	74,991	27.7	13.8	1.4	2.8	9.6	.1
Tennessee	213,779	26.3	8.4	.5	7.8	8.9	.8
Texas	363,491	28.2	14.1	.9	3.3	9.6	.3
Utah	43,198	21.4	6.5	.5	2.6	11.4	.5
Vermont	40,029	17.3	3.7	.3	1.5	11.6	.2
Virginia	169,454	24.9	6.1	.5	8.3	9.2	.9
Washington	113,255	26.4	10.4	.9	2.4	12.3	.5
West Virginia	65,013	15.7	4.5	.2	1.6	9.3	.1
Wisconsin	214,251	25.4	9.4	1.3	3.3	10.6	.8
Wyoming	38,045	19.1	5.9	.5	.7	10.5	1.5

— = Less than 0.1 percent

NA = Not applicable. New Jersey has no nonmetro counties.

Source: Calculated by ERS using Department of Commerce data.

Appendix table 12—The Food and Fiber System and the domestic economy, 1987-96

Item	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Employment:										
Total food and fiber	22.3	23.1	23.2	23.1	22.7	22.0	22.5	22.7	23.1	22.7
Share of domestic labor force	18.6	18.9	18.7	18.4	18.0	17.2	17.4	17.3	17.5	17.0
Farm sector	1.9	2.2	2.1	1.9	2.0	1.7	1.9	1.6	1.7	1.6
Nonfarm sectors	20.4	20.9	21.1	21.2	20.7	20.3	20.6	21.1	21.4	21.1
Food processing	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.3
Manufacturing	2.7	2.8	2.9	2.8	2.7	2.7	2.6	2.7	2.6	2.6
Transportation, trade, and retailing	6.7	6.8	6.9	6.9	6.8	6.7	6.7	7.0	7.1	7.1
Eating	6.4	6.6	6.6	6.7	6.6	6.4	6.7	6.9	7.1	6.9
All other	3.0	3.1	3.1	3.2	3.1	3.0	3.1	3.1	3.2	3.2
Total domestic economy	119.9	121.7	123.9	125.8	126.3	128.1	129.2	131.1	132.3	133.9
Value added by activity:										
Total food and fiber	709.1	777.1	813.0	817.0	801.3	839.5	857.0	962.7	971.3	997.7
Share of domestic economy	15.1	15.4	14.9	14.2	13.5	13.4	13.1	13.9	13.4	13.1
Farm sector	52.7	57.6	60.4	62.2	57.4	66.1	51.1	73.6	50.7	71.3
Nonfarm sectors	656.4	719.5	752.6	755.8	743.9	773.4	805.9	889.1	920.6	926.4
Food processing	91.7	100.7	100.8	100.6	96.2	96.4	100.8	109.1	114.7	108.0
Manufacturing	119.9	133.5	136.5	134.0	127.1	132.7	136.1	154.9	158.3	161.3
Transportation, trade, and retailing	214.3	230.5	246.0	244.6	246.9	260.9	273.0	301.6	313.6	317.0
Eating	92.1	101.8	107.3	107.8	108.3	113.8	122.2	135.2	142.3	139.2
All other	138.4	152.0	161.1	167.8	165.4	171.7	173.7	188.3	191.7	201.0
Total domestic economy	4,692.3	5,049.6	5,438.7	5,743.8	5,916.7	6,244.4	6,558.1	6,947.0	7,265.4	7,636.0

Source: Calculated by ERS from supporting ERS economic models using data from the Bureau of Economic Analysis, Bureau of Labor Statistics, and Bureau of the Census.